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News Bulletin of The Entomological Society of Victoria Inc.

THE ENTOMOLOGICAL SOCIETY OF VICTORIA (Inc)
MEMBERSHIP

Any person with an interest in entomology shall be eligible for Ordinary membership. Members of the Society include professional, amateur and student entomologists, all of whom receive the Society's News Bulletin, the Victorian Entomologist.

OBJECTIVES

The aims of the Society are:

(a) to stimulate the scientific study and discussion of all aspects of entomology,
(b) to gather, disseminate and record knowledge of all identifiable Australian insect species,
(c) to compile a comprehensive list of all Victorian insect species,
(d) to bring together in a congenial but scientific atmosphere all persons interested in entomology.

MEETINGS

The Society's meetings are held at room AG13 of the Lincoln Institute, Swanston Street, Carlton, Melway reference Map 2B E10 at 8 p.m. on the third Friday of even months, with the possible exception of the December meeting which may be held earlier. Lectures by guest speakers or members are a feature of many meetings at which there is ample opportunity for informal discussion between members with similar interests. Forums are also conducted by members on their own particular interest so that others may participate in discussions.

SUBSCRIPTIONS

Ordinary Member	$20.00
Country Member	$16.00 (Over 100 km from GPO Melbourne)
Student Member	$12.00
Associate Member	$ 5.00 (No News Bulletin)

No additional fee is payable for overseas posting by surface mail of the news bulletin. Associate Members, resident at the same address as, and being immediate relatives of an ordinary Member, do not automatically receive the Society's publications but in all other respects rank as ordinary Members.

Cover design by Alan Hyman.

Cover illustration of Magpie Moth or Senecio Moth larvae, *Nyctemera amica*
by Cait Symington.

MINUTES OF GENERAL MEETING 9 DECEMBER 1994

The meeting was opened at 8.22 pm

Present: P. Carwardine, D. Dobrosak, , A. & E. Farnworth, M. Malipatil, T. Morton, D. & N. Stewart.

Visitors: L. Barrow, D. Greenwell, C. McCormick.

Apologies: D. Crosby, I. Endersby, A. Kellchear, C. Meehan.

Minutes: Minutes of the October meeting [Vic. Ent. 24(6):117-118] were confirmed with the correction under General Business (1) that David Stewart not David Holmes recommended that Council investigate the feasibility of the Society running introductory entomology classes in conjunction with the Council of Adult Education. (D. Stewart/A. Farnworth)

Treasurer's Report: Due to the absence of the treasurer, no report was tabled.

Editor's Report: D. Dobrosak advised that sufficient articles were in hand for the next issue. Negotiations would take place with the printer to ensure a consistant cover texture and colour for next years news bulletin.

Excursions: Five people attended "The Pines" excursion. The weather was fine and the preceeding days were warm, however very little was "on the wing". A few swordgrass brown *Tisiphone abeona* were seen and one small skipper (not identified). Larvae were found in lomandra. After lunch, Langwarrin Reserve was also visited and again, little was found.

The next excursion will be held on Sunday 5 March 1995 (Not Saturday 25 February 1995 as previously proposed) in the Castlemaine area. Details are on page 14 of this issue.

General Business:

(1) G.Wood, B. Candusio, G. Riddell and C. Dickson have been nominiated for membership.

Observations:

(1) Tony Morton noticed the apearance of the Caper White, *Anapheis java* recently. A discussion ensued on this species' migratory habits.

(2) C. McCormick observed three sparrows in hot persuit of a cicada.

(3) P. Carwardine asked the visitors from Geelong about the Small Ant Blue *Acrodipsas myrmecophila* colony in that part of Victoria. It appears the colony at Ocean Grove does not exist. A lamenting discussion followed on the topic of the minimum size for a viable colony and the difficulties in managing small colonies of insects.

Exhibits:

(1) P. Carwardine presented an interesting and informative talk on the tools which may be of use to the entomonlogist. This included:

Large Screwdriver: For prising bark and rotting branches in search of insects, pupa etc.

Fine tweezers: For pulling out the stinging hairs of larvae from hands.

Blade Saw and Side Cutting Pliers: For neatly cutting branches, twigs, Gahnia etc.

Small artists brushes: To use as formers for rolling conical paper tubes for placing some species of skippers in. Pupation will not be successfull unless the pupa is placed the correct way up in a conical tube. The brushes can also be used to safely piek up eggs and small larvae.

Hypodermie syringe: For delivering sugar and water solution to cotton wool in breeding cages without openeing the cage.

Pill tubes: For holding specimens in. The better tubes are glass bottomed and vented with gauze.

(2) D. Greenwell presented a bird nesting box which had latter been abandoned and become the home of honey bees. This too was abandined and become the home of a colony of insects which had apparently been feeding upon the wax remaining in the box. D. Geenwell had collected some of the emerging moths from the box which were displayed to the meeting. The insect was most likely a wax moth, probably *Galleria mellonella*, a cosmopolitan species and a common insect problem with apiarists.

(3) A. Farnworth presented a series of slides of Australian spiders. The photography was suberb and A. Farnworth supplied detailed commentary on the life history of the particular spiders. The spiders included: Jumping Spider (*Sandalodes* Sp.), Flower Spider (?), St Andrews Cross Spider (*Argiope keyserlingii*), Orb Weaving Spider (*Eriophora transmarina*) Wolf Spider (*Geolycosa godeffroyi?*), Daddy Long Legs Spider (*Pholcus phalangiodes*), Red and Black Spider (*Nicodamus bicolor*), Huntsman Spider (*Isopeda montana*), Climbing Huntsman Spider (*Isopeda* or *Olios* spp.), Leaf Curling Spider (*Phonognatha graeffei*) and Golder Orb Weaving Spider (*Eriophora biapicata*).

The meeting was elosed at 10.00 pm

CALL FOR NOMINATIONS:
J.C. 'ZOO' LE SOUÊF MEMORIAL AWARD

Nominations for the 1995 award are now invited. Details of Background, nomination, etc. were published in the December 1992 issue of the *Victotian Entomologist*. Nominiations must reach the Council at the following address by 30 September 1995:

Entomological Society of Victoria
c/- 66 Wiltonvale Avenue
Hoppers Crossing, Vic. 3029

NOTES ON THE BIOLOGY AND NEW LARVAL HOSTS OF *CEPHRENES* (LEPIDOPTERA: HESPERIIDAE) - PART II

Kelvyn L. Dunn
14 Batford Street, Sunnybank, Queensland 4109

Summary: 63 new arecaceous larval hosts are given for *Cephrenes* species in Queensland. *C. augiades* is recorded from 49 species, and *C. trichopepla* from 22 palms. In addition, two earlier recorded hosts of both species (*Phoenix canariensis* and *Ph. reclinata*) are confirmed from botanical specimens. Habitat preference is thought to account for the discrepancy in the number of hosts herein recorded for each species. Further comments on larval head variation are given with details of uncommon forms. Although known to be a parasitoid of both species, the tachinid fly *Carcelia cosmophilae* (Curran) was (again) obtained only from *C. augiades* in my samples.

Introduction

In the first part of this series (Dunn 1993) I confirmed *Cephrenes* to be a polyphagous genus utilising 21 palm genera involving at least 31 species. This second list dealing with 65 palm taxa adds 63 new larval hosts; 22 species for *C. trichopepla* and 49 for *C. augiades*, bringing cumulative totals for each species to 47 and 75 respectively. Eight of the new food plants are utilised jointly bringing the tally of shared hosts to 30 species. In total at least 57 genera (94 species) are attacked by palmdart larvae.

Unless otherwise stated, all palms examined are botanical specimens located in the Mount Coot-tha Botanic Gardens, near Brisbane. Identifications at other sites (as specified) are based on the nursery labels, or very occasionally personal identifications (eg. *Ph. sylvestris*). Palms in the Palmetum at Townsville are also botanical specimens. Hosts are listed alphabetically.

Additional Larval Host Records

Acoelorrhaphe wrightii (Silver Saw Palmetto)
Palms showed minor damage to fronds, and several large larval shelters were evident. Most shelters were empty but a mature *trichopepla* was found after regular searching. A first instar larva taken proved the same species.
Country of Origin: Central America

Archontophoenix sp. aff. alexandrae
(As *A.* sp. 'Rocky River' in Dowe 1993).
Heavy damage was evident on an example in the Mount Coot-tha Botanic Gardens. A second instar and two mature larvae of *augiades* were obtained. (Dowe (1993) presented a taxonomic key and general discussion of this and three other undescribed Australian congeners. A generic revision is nearing completion and a technical name should soon be available for this host).
Country of Origin: north-eastern Cape York Peninsula (botanical name plaque). According to Dowe this species occurs from Cape York south to McIllwraith Range.

Areca triandra
Minor damage was evident to this species. A third instar larva of *augiades* was obtained.
Country of Origin: India and Malaysia

Arenga australasica
This native showed heavy damage to fronds, and numerous large larval shelters were examined but only a single fourth instar *augiades* larva was present at the time. This uncommon palm species is evidently a favoured host of at least one *Cephrenes*.
Country of Origin: NE Queensland from Bamaga to Innisfail, and Elcho Island NT.

Arenga engleri
Heavy damage was evident, associated with which were many empty mature larval shelters. A second instar larva taken proved to be *augiades* and developed the dark facial form (see Dunn 1993) by fifth instar.
Country of Origin: Taiwan

Astrocaryum alatum
Minor damage was evident, and a third instar *augiades* larva was obtained. At maturity (November 1993) this larva showed the dark facial form.
Country of Origin: Costa Rica (botanical name plaque)

Attales allenii
Minor damage was evident. A mature *trichopepla* larva was present.
Country of Origin: Panama (botanical name plaque)

Bactris attastapfeana
Minor damage was evident. A mature *augiades* larva was found and a young larva reared proved to be the same species.
Country of Origin: Brazil (botanical name plaque)

Beccariophoenix madagascariensis
A young plant showed heavy damage and a number of old mature shelters were noted. A fourth instar *augiades* larva was uncovered. This appears to be another favoured host of *Cephrenes*. *B. madagascariensis* was not listed as grown in Australia by Jones (1987) and must be a new addition to the gardens.
Country of Origin Madagascar (botanical name plaque)

Brahea brandegeei (San José Hesper Palm)
Palms showed heavy levels of damage. Mature larvae of both *augiades* and *trichapepla* were present during spring and summer in 1993.
Country of Origin: Mexico

Calyptronoma dulcis
Heavy damage to fronds was evident. A pre-pupa of *augiades* was obtained.
Country of Origin: Cuba

Chamaerops humilis (European Fan Palm)
In November (1993) several plants showing minor damage to fronds were examined. Many shelters were evident, most being empty or old. A third instar and mature larva of *augiades* were found.
Country of Origin: Mediterranean coast of Africa and Europe.

Caccothrinax alta
Fronds showed minor damage. A fourth instar *augiades* larva as well as several earlier instars of the same species were present.
Country of Origin: Puerto Rico

Coccothrinax martii
Minor damage was evident. A fourth instar and two mature *trichopepla* larvae were present. A younger larva taken also proved to belong to the same species.
Country of Origin: West Indies

Copernicia alba
Palms exhibited minor damage. Several large shelters were found and one contained a parasitised *augiades* pupa (id. confirmed by attached larval head - pale form). A tachinid pupal exuvia lay beside the chrysalis.
Country of Origin: Brazil and Argentina (botanical name plaque)

Copernicia prunifera (Carnauba Wax Palm)
Palms exhibited minor damage. Mature larvae of both *augiades* and *trichopepla* were present. Only recently introduced to Australia (Jones 1987).
Country of Origin: Brazil

Deckenia nobilis
At the Townsville Palmetum, palms showed minor damage. A number of old shelters was evident, and a fourth instar larva of *augiades* was found.
Country of Origin: Seychelles

Elaeis oleifera (American Oil Palm)
Medium damage was evident. Six early instar *augiades* larvae were reared.
Country of Origin: Central America, Panama, Colombia

Euterpe sp.
Large shelters were present, but only minor damage was evident. An early instar larva taken proved to be *augiades*.
Country of Origin: tropical America (botanical name plaque)

Gulubia hombronii
Heavy damage was evident at the Palmetum, Townsville. A mature *augiades* larva, and a third instar of the same species were taken. *Gulubia* occurs naturally in Australia (as *G. costata*), and *costata* is probably a favoured native host.
Country of Origin: Solomon Islands (botanical name plaque)

Hedyscepe canterburyana
Eggs and several young larvae were present on this species. Four young larvae and one egg taken all proved to be *augiades*. Minor frond damage was evident.
Country of Origin: Lord Howe Island at 400m-800m

Heterospathe elata (Sagisi Palm)
A third instar *augiades* larva was obtained. Fronds showed only minor damage.
Country of Origin: Philippines

Heterospathe negrosensis
Minor damage and associated small shelters were present. An early instar larva of *augiades* was reared.
Country of Origin: Philippines

Hydriastele wendlandiana
Several large, but empty, shelters were found. A single second instar larva of *augiades* was reared. Fronds showed medium levels of damage which I attributed to *Cephrenes* larvae.
Country of Origin: coastal northern Australia (Jones 1987).

Latania vershaffeltii (Yellow Latan Palm)
Medium levels of damage were noted. A mature larva of *trichopepla* and a pupa of the same species were present.
Country of Origin: Rodrigues Island (Mascarene group) (botanical Name Plaque)

Licuala spinosa
Medium level damage to this palm was evident, and many shelters were present. A dead pupa of *augiades* was found. The associated larval head was of the pale form. The cause of death may have been disease.
Country of Origin: Malaysia and India

Livistona decipiens Weeping Cabbage Palm
A second instar and fourth instar larva of *augiades* were obtained. Fronds showed minor damage.
Country of Origin: coastal Queensland; according to Jones (1987) from Cape Cleveland to Mirriam Vale.

Livistona drudei
A mature *augiades* larva and a pupa of the same species (id. confirmed by attached larval head) were found. Two young larvae taken and also proved to be *augiades*. Fronds showed minor damage.
Country of Origin: endemic to coastal northern Queensland.

Livistona muelleri (Dwarf Fan Palm)
Medium level damage was evident in the spring of 1993. A mature larva of *augiades* was obtained.
Country of Origin: North-eastern Queensland

Livistona rotundifolia (Footstool Palm)
Medium level damage was evident to this species in spring (1993). A mature larva of *trichopepla* was uncovered.
Country of Origin: Malaysia

Livistona saribus
Palms showed medium damage to fronds. A third instar of *augiades* was obtained along with a second instar larva of the same species. At third instar the latter larva possessed a grey-black (rather than jet black) head but nevertheless produced a typical dark form (*augiades*) face at maturity.

Livistona sp. 'Blaekdown'
As with the above species medium level damage was evident in spring (1993). A mature larva of *augiades* was obtained, and found to be parasitised by two tachinid flies (*C. cosmophilae*). Its mature larval head was of the dark form. In addition, two mature anthelid larvae (*Anthela* sp.) were found feeding on older fronds in deep shade. The name used is that on the plaque in the Mount Coot-tha gardens. Jones (1987) stated that the Blaekdown Tableland population is an undeseribed species which grows in small scattered colonies in rocky situations.
Country of Origin: confined to the Blaekdown Tableland in central Queensland

Mauritia flexuosa (Ita Palm)
Palms showed heavy levels of damage. A mature larva of *trichopepla*, together with two eclosed pupae of the same species were noted. The attached larval head capsules confirmed the pupal identifications in the absence of the adults.
Country of Origin: South America

Mauritia peruviana
Fronds showed minor damage. A third instar larva of *trichopepla* was obtained.
Country of Origin: Peru (botanical name plaque)

Neodypsis lastelliana
Palms showed medium levels of damage. An old shelter contained the remains of an *augiades* pupa (identification based on enclosed mature larval head). An empty tachinid pupal shell was also present with the ehrysalis remains implicating the cause of death. This palm was not listed as grown in Australia by Jones (1987) and must be a new addition to the gardens.
Country of Origin: Madagascar (botanical name plaque)

Neoveitchia storckii
Palms showed heavy levels of damage. A mature larva of *augiades* was present.
Country of Origin: Fiji

Orbignya cohune (Cohune Palm)
Medium damage to fronds was apparent, and fourth instar larvae of both *trichopepla* and *augiades* were uncovered. The botanical name plaque gave the specific name as *O. phalerata* but this taxon was not listed by Jones (1987). Instead *cohune* was given by Jones for the palm with the same common name.
Country of Origin: central America

Phoenix canariensis
A mature *augiades* larva and a pupa of *trichopepla* were recently obtained in the Mount Coot-tha Botanic Gardens. This confirms earlier records (Hutchison 1983, 1989, Dunn 1993) which were based on garden and nursery material.

Phoenix loureirii
A mature *trichopepla* larva was present. Fronds showed minor damage.
Country of Origin: Indochina, Hong Kong, India

Phoenix rupicola (Cliff Date Palm)
Numerous larval shelters were present on large plants but fronds displayed only minor damage. Two fourth instars of *augiades* and a mature larva of the same species were obtained. The mature larva was parasitised by the tachinid fly, *C. cosmophilae*.
Country of Origin: India

Phoenix reclinata
In the Mount Coot-tha Botanic Gardens a mature *trichopepla* larva and a third instar of *augiades* were obtained, as well as two early instars of both species. This is an established host of *trichopepla* (Dunn 1993), but the only records for *augiades* was that of Rainbow (1907) (see Dunn 1993 for discussion) and a recent observation of oviposition in Victoria (Crosby 1994). Rainbow's record is now confirmed.

Phoenix sylvestris (Silver Date Palm)
At Uki in northern NSW many mature *augiades* larvae and a few *trichopepla* pupae (with associated larval heads) were uncovered on this palm.
Country of Origin: India

Pinanga dicksonii
Minor damage was evident to this shade-loving species. A fourth instar larva of *augiades* was uncovered.
Country of Origin: India

Pinanga urosperma
At the Palmetum in Townsville minor damage was evident. A mature *augiades* larva was obtained.
Country of Origin: Philippines (botanical name plaque)

Pritchardia affinis
Minor damage was evident to fronds. A fourth instar larva of *augiades* and two mature *trichopepla* larvae were obtained.
Country of Origin: Hawaii (botanical name plaque)

Pritchardia beccariana
Palms exhibited minor damage. Three mature *trichopepla* larvae and a second and fourth instar of the same species were obtained.
Country of Origin: Hawaii

Pritchardia hillebrandii (Loulou Lelo Palm)
A third instar *augiades* larva was recently found on a palm I planted last season at Eagleby, and two second instar larvae were found at Daisy Hill. Both Daisy Hill speeimens were reared and comprised *trichopepla* and *augiades*. In addition, at the Mount Coot-tha Botanie Gardens two mature *trichopepla* larvae were uncovered. Earlier I had found the fronds aeceptable to both species in captivity (Dunn 1993) but had diffieulty finding enough material to regularly examine. *P. hillebrandii* is utilised by both *Cephrenes* speeies in the field. Only minor damage was evident.
Country of Origin: Hawaii

Pritchardia macrocarpa
Minor damage was evident to palms. A fourth instar, a mature larva and pupa of *trichopepla* were found.
Country of Origin: Hawaii (botanical name plaque)

Ptychosperma ambiguum
A mature *augiades* larva was found. The palm showed only minor damage.
Country of Origin: West Irian

Ptychosperma macarthurii (MacArthur Palm)
Two mature *augiades* larvae were obtained. The fronds showed minor damage.
Country of Origin: Cape York Peninsula Qld and New Guinea

Ravenea rivularis
A first instar larva (probably *augiades*) was found in a shelter on this species in my garden (Eagleby) in November 1993. The larva was left on the plant to observe its development, but it vanished after several days feeding; a hunting spider was found on the same pinnule which had housed the larval shelter. Soon after another first instar shelter was uncovered but this was empty and, later, in January 1994 another (empty) juvenile shelter appeared.

In January 1994 at the Mount Coot-tha Botanic Gardens I examined two *rivularis* specimens. An egg and a large larval shelter were present. The egg was taken for later identification, and the resulting larva reared on *Archontophoenix alexandrae* (to avoid potential loss; see Dunn 1993), upon maturity proved to be *augiades*. Very occasionally *augiades* females lay on *R. rivularis* and a small percentage of larvae may survive at least to later instars based on the presence of a large (empty) shelter.

Later in March (1994) a mature larva of *trichopepla* was present on my own palm, associated with extensive damage. My earlier findings of unsuitability on this very same individual plant now appear contradicted. It is possible my palm had been sprayed prior to purchase or, perhaps, some larvae can tolerate its foliage. It seems, however, that at the present time *R. rivularis* is only rarely utilised by *Cephrenes*, and complete development remains unconfirmed for *augiades*.

Raphia australis
Medium to heavy levels of damage were evident. A number of *augiades* larvae of various instars were reared. Moth larvae of *Lambula pristina* (Walker) (Arctiidae) and a pupa of *Isotenes miserana* (Walker) (Tortricidae) were also obtained. *Raphia* palms have rather nasty spines along the pinnules which can pierce the skin and draw blood. Care needs to be taken when searching for caterpillars on this palm.
Country of Origin: Mozambique (botanical name plaque)

Raphia farinifera (Raffia Palm)
Medium levels of damage were evident. A mature *augiades* larva and two fourth instars of the same species were uncovered. Jones (1987) commented that the fronds of this species can reach 20m in length and at such times are the largest leaves in the plant kingdom!
Country of Origin: Madagascar

Rhapis humilis (Slender Lady Palm)
Usually no damage was evident on this species. However, on one inspection two young larvae were found and both proved to be *trichopepla*. The female of this palm species is unknown and all cultivated plants in the world have resulted from vegetative propagation by division (Jones 1987).
Country of Origin: (probably) China

Rhapidophyllum hystrix (Needle Palm)
Minor damage was evident to this spiny palm. A live pupa of *trichopepla* was present.
Country of Origin: SE USA

Rhopaloblaste augusta
Medium damage was present on palms in the Townsville Palmetum. Third and fourth instar larvae of *augiades* were obtained.
Country of Origin: Nicobar Island (botanical name plaque)

Rhapalostylis cheesemanii (Kermadec Nikau Palm)
Medium levels of damage were evident. Two mature *augiades* larvae along with a fourth instar of the same species were present. This appears a favoured host of *Cephrenes*.
Country of Origin: Raoul Island off the coast of New Zealand

Sabal mexicana (Texas Palmetto)
Minor damage was evident to several young (height: 1-2m) palms. Several large shelters were present and, two pupae, a fourth instar larva and four mature larvae of *trichopepla* were found.
Country of Origin: Guatemala to northern Mexico and southern Texas

Sabal yapa
Minor damage was evident to several young (2m high) palms, and mature larvae of both *augiades* and *trichopepla* were present. In addition, a pupa of *trichapepla* was uncovered, and a second instar *augiades* larva was reared. This palm was not listed as grown in Australia by Jones (1987) and may be a new addition to the Mount Coot-tha Botanic Gardens.
Country of Origin: Cuba and W. Berlize (botanical name plaque)

Scheelea butyracea
Heavy damage was evident to a young (1m high) palm. An eclosed pupa of *trichopepla* was found; the still attached larval head capsule at the base of the shelter confirmed the species identification. Jones (1987) commented that this is one of a group of more than 50 palms in four genera that have basically similar physical characteristics. As *S. butyracea* seems a favoured host (based on the considerable damage to fronds) I would not be surprised if all of these 50 taxa are potential hosts of *trichopepla*.
Country of Origin: Columbia

Syagrus schizophylla
Minor damage to fronds was evident. A second instar larva of *augiades* was reared.
Country of Origin: Brazil (botanical name plaque)

Thrinax radiata
Palms showed medium levels of damage. Two mature *augiades* larvae were found.
Country of Origin: Carribean region and southern Florida (USA)

Trithrinax acanthocoma (Spiny Fibre Palm)
Minor damage was evident to this species. A mature larva of *augiades* was present. A second instar larva taken proved the same species.
Country of Origin: Brazil

Vonitra fibrosa
Palms at the Townsville Palmetum showed minor damage. Three small larvae were present, two of which were taken and subsequently proved to be *augiades*
Country of Origin: Madagascar (botanical name plaque)

Zombia antillarum
Fronds of this species showed minor damage. Several shelters were opened and one contained a fourth instar larva of *augiades*. Many eggs (not determined but perhaps *trichapepla* as palms were in very exposed areas - see later discussion) were present near the base of the palmate fronds (Dunn 1994). This Caribbean palm is rarely grown in Australia. It is a recent addition to the Mount Coot-tha Botanic Gardens as Jones (1987) did not list in his checklist of their holdings as of 1982.
Country of Origin: Haiti

General Biology

Habitat Oviposition Preferences: Studies at Griffith University showed that *augiades* will oviposit in both shady and sunlit conditions in an urban vegetation formation. However, Lyonns (1988) reported that *Archontophoenix* palms in direct sunshine were visited and oviposited on more often than those in shade. Lyonns findings probably also apply to elosed forests (the natural habitat of *augiades*), and understorey palms receiving filtered sunshine during female presence are likely to be selected over those (then) in complete shade. No comparative information is on hand for *trichopepla*.

In the Mount Coot-tha Botanie Gardens juveniles of *trichopepla* appeared quite scarce or, indeed, frequently absent from densely shaded areas within simulated rainforest, despite an understorey of many suitable young palms. These palms were usually occupied by *augiades* larvae. Nearby in exposed, fully sunlit, areas the numbers of *trichopepla* juveniles usually exceeded those of *augiades*. As an example, all *Pritchardia* spp. examined were planted in exposed situations and the ratio of *augiades* to *trichopepla* was 1:4.33 (n=16). In contrast all *Livistona* material examined (this paper) were situated in deep shade, and the ratio of *augiades* to *trichopepla* was 9:1 (n=10). Both *Livistona* and *Pritchardia* showed minor damage suggesting similar levels of herbivory, and both palmdart species utilise both genera. A species biased ratio seemed to occur consistently between the two habitat formations irrespective of the palm species or genera utilised. The polyphagous nature (within Arecaceae) of the larvae would implicate habitat preference as the likely decisive factor as to whether a particular palm species was occupied by one or both skipper species.

In part I most palms were growing in open areas in nurseries or residential gardens, and many bosts (71%) were shared. *Laccospadix australasica* showed regular attack, but I never found *trichopepla* present despite regular searching (Dunn 1993). This rainforest native was grown under extensive shade cloth (simulated canopy) at the nursery. In Mount Coot-tha Botanic Gardens and the Townsville Palmetum where habitat structure is marked less than 11% of recorded hosts (part II) were shared. Many of these botanical speeimens were planted in deeply shaded or partially shaded areas. If these same palms were grown (or could be grown) in fully exposed situations it is very likely they would be utilised by *trichopepla* also.

Field observations of adults also support this general idea. Beyond urban areas I have found *augiades* to be more or less a rainforest inhabitant (see also Lyonns 1988), whereas *trichopepla* usually occurs in open forests and woodlands. In northern New South Wales where both species can occur sympatrically, *trichopepla* appears to be absent from the rainforest margins in Mount Warning National Park, but is present in residential gardens at Uki which is but a few kilometres away.

Thus, it seems habitat preference is responsible for the absence of *trichopepla* from many of the palms recorded as hosts of *augiades*, thereby explaining the notable discrepancy in the number of recorded hosts for each species. Unlike *augiades*, it seems closed forests are very infrequently entered by *trichopepla* females, at least when hosts are available in open areas.

Separation of Larvae: Dunn (1993) diseussed the specifie separation of various aged larvae and variation in facial markings of later instars of both species. Some variation in young *trichopepla* larval heads was briefly mentioned. To further this discussion, of two young *trichopepla* larvae obtained recently from *Rhapis humilis*, one of these larvae possessed two pale spots at the top of head at third instar (implicating *trichopepla*), and the other had a blackish head on which it was difficult to see any obvious markings. In the latter larva the head was marginally paler in the dorsal region rather than completely black more typical of third instar *augiades*, but never-the-less at the time of colleetion it was difficult to aceurately identify

to species. It also proved to be *trichopepla* and confirmed such variation within the species.

Third instar *augiades* larvae do not possess any pale markings; the head capsule is normally a shiny jet black through to the fourth instar inclusive. However, near Brisbane in spring (1993), one larva had a greyish head capsule (instar IV) and, in summer, two fourth instars were encountered with reddish brown head capsules. Also, on similarly rare occasions, some (three only) fourth instars showed preliminary markings resembling the general form of the species at maturity (instar V). These precursorial patterns occurred in the dorsal area of the head capsule, but the markings were somewhat indistinct. In *trichopepla*, fourth instar larvae always show a more melanic form of the mature larval head, and the yellow facial markings, unique to this species, are usually clearly visible in this instar (Dunn 1993).

In addition, two of a series of five *augiades* larvae I collected at Townsville in February (1994) showed the preliminary head pattern at fourth instar. Fifth instar larvae from this northern Queensland locality showed both the pale and dark headed forms; and these agreed closely with the head capsule figures by Dunn (1993). However, in disagreement, the color of the darker markings was a reddish tan-brown in both forms (rather than dark chocolate as in the dark facial form from south-eastern Queensland).

These observations complement and support my earlier findings. The causatives of the patterns and color variation in the later instar *augiades* larval heads remains unclear, but it seems that the pale facial form is more frequently encountered in the cooler months in south-eastern Queensland. Indeed, Australian *augiades* is highly variable in faeies both at adult and larval stages.

Acknowledgements

Thanks to Ted Edwards (CSIRO) for identifying the adult moths reared from larvae obtained from *Raphia* and *Livistona*, and Brian Cantrell (QDPI) for his identification of the tachinid parasitoids.

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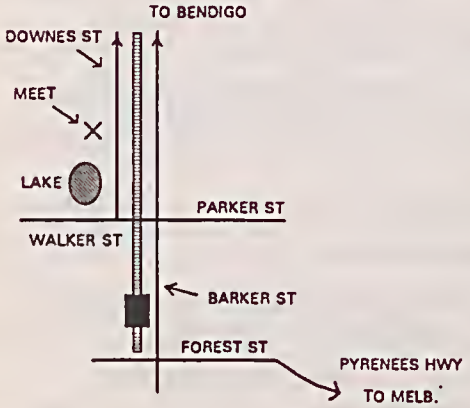
EXCURSION TO CASTLEMAINE AREA
SUNDAY 5 MARCH 1995



MEET: Botanic Gardens Picnic Area. About 250m along Downes Street, toilets available

TIME: 10:30 AM

DATE: SUNDAY, 5 March 1995

LUNCH: Bring Lunch, or buy at Castlemaine

THE BUTTERFLIES OF ATHERTON SHIRE, NORTH QUEENSLAND

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Abstract

A list is compiled from recorded and personal observations of the butterflies of the Shire of Atherton, North Queensland, and some brief categorisation of their habitat and relative abundance added. A total of 192 species is recorded.

INTRODUCTION

Within the constantly changing role of Local Government a need has recently emerged to maintain a register of the assets of individual Local Authorities -a register of physical assets, such as buildings, roads, bridges, culverts and pipes, sewerage reticulation schemes, construction machinery and equipment etc., and also a register of the natural or environmental assets. As research progressed into such a register of natural and environmental assets of Atherton Shire (T. Bartareau pers. comm.), it became glaringly apparent that relative information about the distribution and habitat requirements of native fauna, particularly insects, of specific regions was not readily available. Hence it was deemed that a compiled summary of the recorded (Common & Waterhouse 1981, Dunn & Dunn 1991) and observed species of butterflies of the Shire would be of some interest, and should be a component of an environmental audit of the Shire, especially as they may be categorised as "flagship" species of the insect world, and may promote further similar research. Care has been taken with "recorded" observations that have not been confirmed by field observations - for example, some species have in the past been recorded from the Atherton Tableland, which is a more general area than that which is specifically being recorded here. Unless recorded localities were positively identifiable within the Shire, or were confirmed by field observations, they were not included.

It is emphasised here that the region being considered is one of political boundaries, and as such this report does not consider the Atherton Tablelands region as a whole - however, it is hoped that it may act as a stimulus for further reports accompanying environmental audits of other Local Government areas. Nomenclature follows that of Dunn & Dunn 1991. Field observations are those of the author, based upon a period of fourteen years residency and working environment within the Shire.

The Shire of Atherton - A Summary

The Shire of Atherton is confined within a relatively small geographical area - approximately 40 km. north/south, and approximately 35 km. east/west. It straddles the Atherton Tablelands proper, and as such supports fairly extensive areas of intensive agriculture. It is bound in the western segment by the Great Dividing, Herberton, and Hugh Nelson Ranges respectively, and in the northern segments is bound by the Tinaroo, Lamb, and Gillies Ranges respectively. The Barron River has its headwaters in the southern extremity of the shire, and is the prineipal drainage system, traversing the length of the Shire. Tinaroo Falls Dam, constructed on the Barron River, is an extensive body of water that supplies water for irrigation of crops as well as domestic usage, both within and external to the Shire. The altitudinal range within the Shire ranges from about 500 m. to 1270 m. (1640 ft.- 4170 ft.). Accordingly, natural habitat types are extremely diverse, with extensive medium and upland rainforest areas, riverine and gallery forests, wet selerophyll, and open eucalypt woodland. The average annual rainfall for Atherton is about 1500 mm, though the north eastern and southern segments of the Shire receives considerably higher rainfall, while the north western segment receives considerably less rainfall. For an overall view of the Shire, refer to the accompanying map.

Some Distributional Notes

This summary does not intend to quantify distributional data of individual species - its basis is to provide a checklist of species recorded within the Shire of Atherton to date. This list is certainly not complete, as more species will almost certainly be added. However, it should be stated here that some species only just manage to "creep" into the Shire boundaries, and that indeed their more usual distribution lies external to the Shire. For example, some coastal species marginally extend over the top of the Lamb and Gillies Ranges. Similarly, Green Tree Ants (*Oecophylla smaragdina*) follow the Barron River valley, and are restricted to approximately the 500 m. contour - hence some species of butterflies associated with these ants are also quite limited in their distribution within the Shire. It is also of interest to observe some species, usually associated with Oecophylla ants (notably *Arhopala micale amphis* Whouse, and *Hypolycaena phorbasphorbas* (Fab)), migrating across the shire in a southerly direction, apparently away from any areas harbouring Oecophylla ants, as has been observed on two occasions. Comments about the resident status of individual species are relevant to the study area only, and should not be extended to interpolate or extract similar information for other areas.

THE BUTTERFLIES	HABITAT	RESIDENT STATUS
PAPILIONIDAE		
Protographium leasthenes leosthenes (Dday)	G	L,U
Graphium macleayanum wilsoni Cman	R	C
Graphium sarpedon charedan (C & R Felder)	R,G,WS,E	C
Graphium eurypylus lycaon (C & R Felder)	R,G,WS,E	C
Graphium macfarlanei macfarlanei (Butler)	R,G	L,U
Graphium agamemnan ligatum (Rchild)	R,G	C
Graphium aristeus parmatum (Gray)	G	L,U
Eleppone anactus (Macleay)	G,WS,E	C
Papilia aegeus aegeus Dvan	R,G,WS,E	C
Papilia fuscus capaneus Wwood	R,G	C
Papilia ambrax egipius Miskin	R,G	C
Papilia demaleus sthenelus Macleay	E	C
Papilio ulysses joesa Butler	R,G,WS	C
Cressida cressida cassandro (Whse & Lyell)	G,WS,E	C
Atrophaneura polydarus queenslandicus (Rchild)	R,G	L
Troides priamus eupharian (Gray)	R,G	C
PIERIDAE		
Catapsilia pyranthe crokera (Macleay)	WS,E	C
Catapsilia pomona pomana (Fab)	R,G,WS,E	C
Catapsilia scylla etesia (Hew)	G,WS	C
Eurema brigitta australis (Wallace)	WS,E	C
Eurema hecabe phoebus (Butler)	R,G,WS,E	C
Eurema smilax (Don)	WS,E	C
Eurema sana (But)	WS,E	C
Eurema laeta lineata (Miskin)	WS,E	C
Eurema herla (Macleay)	WS,E	C
Elodina parthia (Hewitsan)	E	C
Elodina padusa (Hewitsan)	WS,E	C
Elodina walkeri But	R,WS	C
Eladina queenslandica kuranda DeBaar & Hancack	R,WS	C
Delias argenthana argenthana (Fab)	WS,E	C
Delias mysis mysis (Fab)	R,G,WS	C
Delias ennia nigidius Miskin	R	C

Delias nigrina (Fab)	R,G,WS,E	C
Delias nysa nysa (Fab)	R	C
Anaphaeis java teutania (Fab)	WS,E	C
Cepora perimale scyllara (Macleay)	R,G,WS	C
Appias paulina ega (Bduval)	R,G,WS	C
Appias melania (Fab)	R	C
Pieris rapoe rapae (Linn)	Urban, Rural (Disturbed areas)	C

NYMPHALIDAE

Danaus plexippus plexippus (Linn)	WS,E	C
Danaus chrysippus petilia (Stoll)	WS,E	C
Danaus affinus affinus (Fab)	WS	L
Danaus hamatus hamatus (Macleay)	R,G,WS,E	C
Euploea elchorni Stdgr	G,WS	L
Euploea core corinna (Macleay)	G,WS,E	C
Euploea sylvester sylvester (Fab)	R,G,WS	C
Euploea tulliolis tulliolis (Fab)	R,G,WS	C
Tellervo zoilus zoilus (Fab)	R,G	C
Melanitis leda bankia (Fab)	R,G,WS,E	C
Mycalesis sirius sirius (Fab)	WS	L
Mycalesis terminus terminus (Fab)	R,G,WS	C
Mycalesis perseus perseus (Fab)	WS,E	C
Hypocysta irius (Fab)	R,G,WS,E	C
Hypocysta metirius Butler	R,G,WS,E	C
Hypocysta adiante adiante (Hubner)	WS,E	C
Tisiphone helena (Oliff)	R	C
Xois arctoa arctoa (Fab)	R,G,WS,E	C
Polyura pyrrhus sempronius (Fab)	WS,E	C
Phaedyma shepherdi latisfasciata (Butler)	R,G,WS	C
Neptis praslini staudingereana deNicevilE	R	L,U
Pantaporia consimilis consimilis (Bduval)	R,G	C
Mynes geaffroyi guerini WallacE	R,G	C
Doleschallia bisaltide australis Felder	R,G	C
Hypolimnas bolina nerina (Fab)	R,G,WS,E	C
Hypolimnas misippus (Linn)	WS,E	U
Hypolimnas alimena lamina Fruhstorfer	R,G,WS	C
Yoma sabina parva (Butler)	G	L,U
Vanessa kershawi (McCay)	WS,E	C
Vanessa itea (Fab)	R,WS	C
Junonia hedonia zelima (Fab)	WS,E	C
Junonia villida calybe (Godart)	WS,E	C
Junonia orithya albicincta Butler	R,G,WS,E	C
Cethosia cydippe chrysippe (Fab)	R,G	L
Vindula arsinoe ada (Butler)	R,G,	C
Vagrans egista propinqua (Miskin)	R	C
Cupha prosope prosape (Fab)	R,G	C
Acraea andromacha andromacha (Fab)	R,G,WS,E	C

LIBYTHEIDAE

Libythea geoffroy nicevillei	R	R,I

LYCAENIDAE

Acrodipsas brisbanensis brisbanensis (Miskin)	E	L
Pseudodipsas eone iole Whse & Lyell	G,WS	L
Pseudodipsas cephenes Hew	G,WS	L
Hypochrysaps delicia duaringae (Whse)	E	L

Hypochrysops ignitus chrysonotus Grose-Smith	E	C
Hypochrysops miskini (Whse)	G,WS	L
Hypochrysops pythias euclides Miskin	R	L,U
Hypochrysops apelles apelles (Fab)	WS,E	C
Hypochrysops digglesi (Hew)	WS,E	L,U
Philiris nitens nitens (Grose-Smith)	R	L,U
Philiris innotato evinculus Wind & Clench	G,WS,E	C
Arhopala centourus centourus (Fab)	G	L,U
Arhopala micale amphis WhsE	G	L,U
Ogyris zosine typhon Whse & Lyell	E	C
Ogyris olane ocela WhsE	E	L
Ogyris iphis iphis Whse & Lyell	E	L
Ogyris oroetes oroetes Hew	E	L
Jalmenus eichorni Stoudgr	E	L,U
Jalmenus ictinus Hew	E	L,U
Jalmenus pseudictinus Kerr & Mocqueen	E	C
Hypolycaena phorbas phorbas (Fab)	G	L,U
Hypolycaeno danis turneri (Whse)	R,G,WS	L
Deudorix epijarbis dido WhsE	R	L,U
Deudorix diavis Hew	G,WS	C
Ropala varuna simsani (Miskin)	R,G,WS	L
Bindahara phocides yurgamma Couchman	G	L,U
Anthene lycaenoides godeffroyi (Semper)	R,WS	L
Candalides margarita margarita (Semper)	R,G,WS	C
Candalides helenita helenita (Semper)	R	C
Candalides absimilis (Felder)	R,G	C
Candalides consimilis consimilis WhsE	R,G	C
Candalides erinus erinus (Fab)	WS,E	C
Candalides geminus Edwards & Kerr	E	L,U
Candalides xanthospilas (Hubner)	E	L
Nacoduba berenice berenice (Herr-Schfr)	R,G	L
Nacaduba kuravo parma Whse & Lyell	R,G,WS	L
Nacaduba biocellata biocellata (Felder)	R,G,WS,E	C
Prosotas dubiosa dubiasa (Semper)	R,G,WS	C
Prosotas nora aulettes (Whse & Lyell)	R	C
Catopyrops florinda estrella (Whse & Lyell)	WS,E	L
Erysichton lineata lineata (Murray)	R,G	C
Erysichton palmyra tasmanicus (Miskin)	R	U
Theclinesthes onycha capricornia Sib & Grund	E	C
Theclinesthes miskini eucalypti Sib & Grund	E	C
Theclinesthes scintillata (Lucas)	R	L
Danis hymetus taletum (Whse & Lyell)	R,G,WS	C
Danis cyanea arinia (Oberthur)	R	L,U
Jamides phaseli (Mathew)	R,G,WS,E	C
Catochrysops panormus platissa (Herr-Sch)	R,G,WS,E	C
Lampides boeticus (Linn)	R,G,WS,E	C
Syntarucus plinius pseudocassius (Murray)	WS	L
Zizeeria karsandra (Moore)	E	L
Zizina labrodus labradus (Godart)	WS,E	C
Famegana alsulus alsulus (Herr-Schfr)	WS,E	C
Zizula hylax attenuata (Lucas)	WS,E	L
Everes lacturnus australis Cman	WS,E	C
Celastrina tenella tenella (Miskin)	R	L,U
Megisba strongyle nigra (Miskin)	R,G,WS	C
Euchrysops cnejus cnidus Whse & Lyell WS,	E	C
Freyeria trochylus putli (Kollar)	E	L,U

HESPERIIDAE

Hasora discolar mastusia Fruſstorfer	R	L,U
Hasora chromus chromus (Cramer)	R,G,WS	C
Bodamia exclamationis (Fab)	R,G,WS,E	C
Euschemon rafflesia alba Mabille	R	L
Chaetocneme denitza (Hew)	E	L,U
Chaetocneme beata (Hew)	R,WS	L
Choetocneme porphyropis (Meyrick & Lower)	R	L
Netrocaryne repanda exponsa Whse	R,G,WS	C
Tagiades japetus janetta Butler	R	L
Trapeziies symmomus sombra Whse	WS,E	L
Trapezites heteromacula Meyrick & Lower	E	L,U
Trapezites macqueeni Kerr & Sands	E	L
Tropezites ellena (Hew)	E	C
Trapezites iacchus (Fab)	E	C
Trapezites maheta (Hew)	E	L,U
Tropezites petolla (Hew)	E	C
Toxidia peron (Latrielle)	R,WS,E	C
Taxidia thyrrhus Mabille	G,WS,E	L,U
Toxidia daubiedayi (Felder)	WS,E	L
Taxidia rietmanni parasema (Lower)	R,WS	L
Toxidia melania (Whse)	R	L
Neohesperilla xiphiphora (Lower)	E	L
Neohesperilla cracea (Miskin)	E	L
Neohesperilla xonthomera (Meyrick & Lower)	E	L
Hesperilla crypsigramma (Meyrick & Lower)	E	L
Hesperilla sexguttata Herrich-Schaffer	E	L
Hesperilla malindeva Lower	E	L
Hesperilla arnata manatherma (Lawer)	R	L
Taractrocera papyria papyria (Baisduval)	E	L
Taractrocera anisomorpha (Lower)	E	L
Taroctrocera dalon dolon (Plotz)	E	L
Taractracera ina Whse	E	L
Ocybadistes flavovittatus ceres Whse	E	C
Ocybadistes walkeri sonia Whse	E	C
Ocybadistes hypomeloma hypomeloma Lower	E	C
Ocybadistes ardea heterobathra (Lower)	R	L
Suniana lascivia neocles (Mabille)	E	L
Suniana sunias rectivitta (Mabille)	R,G,WS	C
Arhennes dschilus iris (Whse)	R,G,WS	C
Arhennes marnas affinis (Whse & Lyell)	WS	L
Telicota colon argeus (Plotz)	R,G,WS	C
Telicota augias kreffti (Macleay)	R,WS	L
Telicata ohara ahara (Plotz)	R	L,U
Telicota ancilla ancilla (Herrich-Schaffer)	R,WS	L
Telicata mesaptis mesoptis Lower	R	L
Cephrenes trichopepla (Lower)	R,G,WS	C
Cephrenes augiades sperthias (Felder)	R,G,WS	C
Sabera fuliginasa fuliginosa (Miskin)	R	L
Sabera dabbae autoiean (Miskin)	R	L
Sabera caesina albifascia (Miskin)	R	L
Parnara naso sida (Whse)	R,WS,E	C
Parnara amalia (Semper)	WS	L
Pelopidas agna dinga Evans	R,G,WS,E	C
Pelopidas lyelli lyelli (Rchild)	R,G,WS,E	C

LEGEND:	R	Rainforest	C	Common
	G	Gallery forest	L	Local
	WS	Wet sclerophyll forest	U	Uncommon
	E	Open eucalypt woodland	R	Rare
			I	Indeterminate, Unknown

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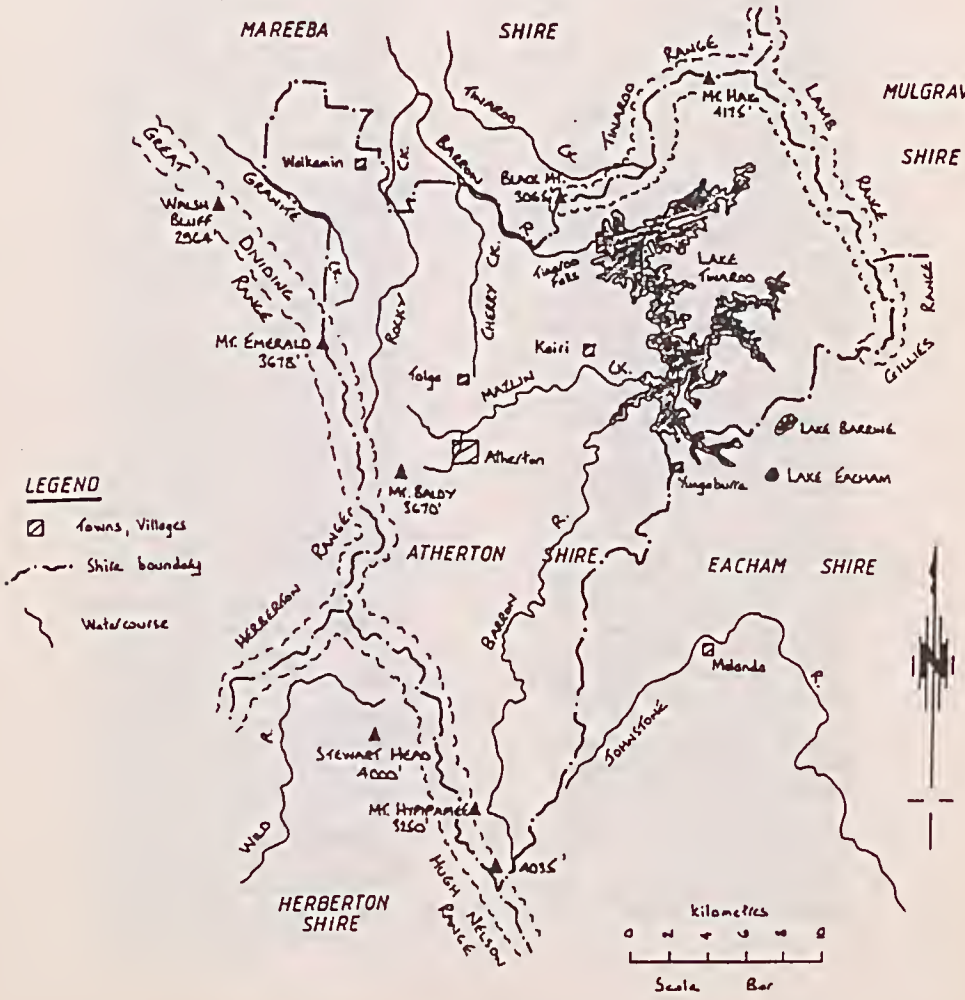

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DIARY OF COMING EVENTS

17 February - General Meeting

Peter Kelly - Illustrated talk on Coleoptera

SUNDAY, 5 March 1995 - Excursion to Castlemain Area

17 March - Council Meeting

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